

Species Differences in Antimicrobial Resistance among Coagulase-negative Staphylococci from Blood in the UK and Ireland

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Background Coagulase-negative staphylococci are frequent agents of bacteraemia but their resistance patterns receive relatively little attention.

Methods From 2001 to 2005, 29 UK and Irish centres supplied 1011 isolates of coagulase-negative staphylococci from blood. Isolates were identified by PCR. MICs were measured centrally by BSAC methods and compared by % non-susceptibility (for antibiotics with clear sub-populations) or geometric mean MIC (for highly active agents with unimodal MIC distributions). Regression analyses used robust errors to account for clustering by collection centre.

Results The majority (61%) of isolates were *S. epidermidis*. *S. haemolyticus* were positively associated with line-derived infections (79% of isolates, vs. 62% for other species), and with ICU and haematology/oncology patients (62% vs. 39% for other species). *S. capitis* were associated with young children (31% were from those aged ≤4 years, vs. 10% for other species).

Abbreviations Non-susceptibility (%) & Breakpoints (mg/L)

(n=1011, 2001-2005, unless shown otherwise.)

BPR ceftobiprole (n = 602; 2003 - 2005)

CIP ciprofloxacin 52% MIC >1

DAP daptomycin (n = 415; 2003, 2005) 0% MIC >1

ERY erythromycin 72% MIC >0.5

GEN gentamicin 57% MIC >1

LZD linezolid 0% MIC >4

OXA oxacillin 65% MIC >2

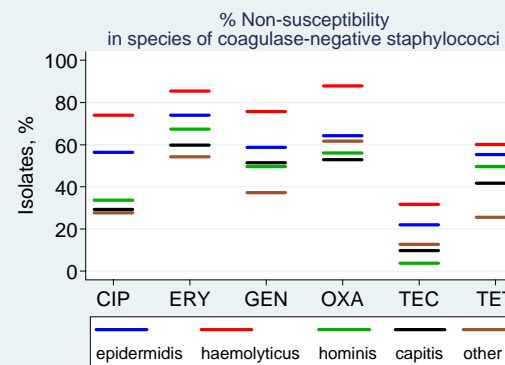
TEC teicoplanin 19% MIC >4

TET tetracycline 52% MIC >1

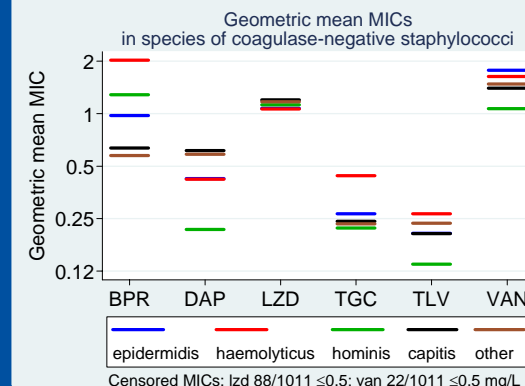
TGC tigecycline (n = 802; 2002 - 2005)

TLV telavancin (n = 203; 2005)

VAN vancomycin 0.1% MIC >4

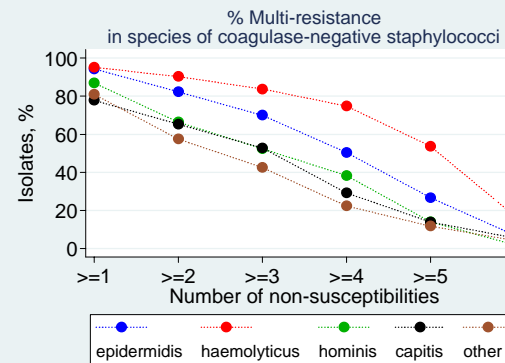
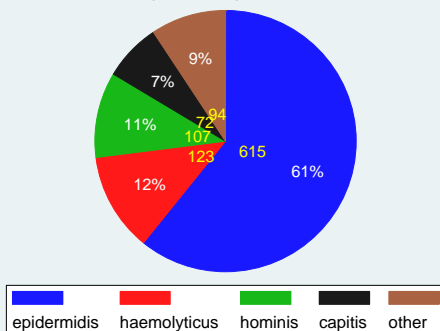


Species differed significantly in non-susceptibility rates for CIP, ERY, GEN, OXA, TEC and TET.



Species showed significant differences in geometric mean MIC for BPR, DAP, TGC, TLV and VAN.

Species distribution of 1011 coagulase-negative staphylococci



Number of non-susceptibilities to six established antibiotics: CIP, ERY, GEN, OXA, TEC & TET.

Results *S. haemolyticus* had the highest, and *S. epidermidis* the second-highest, non-susceptibility rates to most tested antimicrobials. Differences remained after accounting for speciality (ICU / haematology / oncology vs. others).

84% of *S. haemolyticus* and 70% of *S. epidermidis* were non-susceptible to three or more of the antibiotics CIP, ERY, GEN, OXA, TEC and TET.

Conclusions

- Coagulase-negative staphylococci from bacteremia in the UK and Ireland are frequently multi-resistant.
- There are sizeable differences in prevalence of resistance between species, with *S. haemolyticus* typically more resistant than others.

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